Occurrence of *Protohydra leuckarti* in Puget Sound

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SINCE THE HYDROZOAN *Protohydra leuckarti* Greeff has always been considered an animal of great taxonomic and morphological interest, its discovery on the Pacific coast of North America deserves notice. This is the first record of the species for the Pacific Ocean. It was reported once before from the Pacific area, from a lake—probably a brackish one —in Kamtchatka (Abonyi, 1929).

My specimens are derived from two sand beaches on Puget Sound in the state of Washington, viz., from "Golden Gardens," within the city limits of Seattle on the east side of the Sound, and from Vashon Island farther south in the Sound. The species occurs in the lower intertidal zone of the beaches (from −1 to +3 feet), sometimes in considerable numbers. It was found in October 1955 and January 1956 at Golden Gardens, in May 1956 on Vashon Island. The sand is medium fine at the former locality, fine at the latter. A mechanical grain analysis of the two substrata gave the following results:

	Golden Gardens	Vashon Island
4760–2362μ	10.9%	0.1%
2362–1190μ	13.3	0.3
1190– 589μ	44.9	2.7
589– 295μ	26.8	19.1
295– 149μ	3.9	61.7
<149μ	. . .	16.1

The surface water of Puget Sound is of slightly reduced salinity; it varies from less than 27.5‰ in April and May to 30‰ in autumn months. This is true also for the central portion of Puget Sound. The water

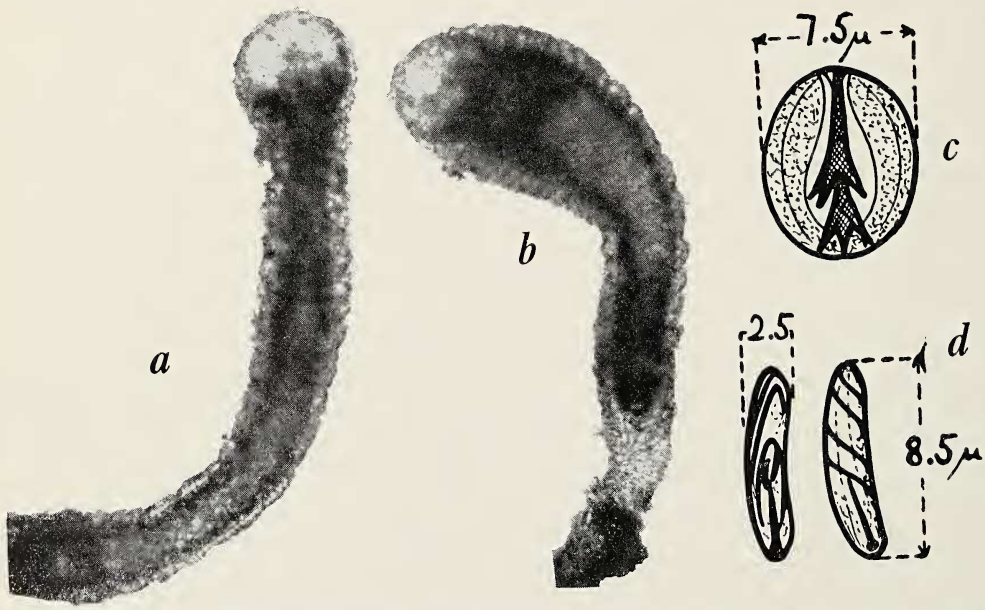

FIG. 1. *a* and *b:* Two different stages of contraction of the same specimen of *Protohydra leuckarti* (photomicrograph from life by Pat Dudley). Note the globular swelling at the anterior end in *a*. This is a typical stage after a wave of contraction has travelled through the animal from back to front. *c:* Stenotele (penetrant), *d:* isorhizas (glutinants), from an alcohol-fixed specimen.

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FIG. 2. Map of distribution of *Protohydra leuckarti*.

along the beaches is subject to greater variations in salinity due to the inflow of several rivers, but it never can be called brackish. Therefore, Ekman's statement (1953: 117) to the effect that *P. leuckarti* is a typical indicator of brackish water (that is, mesohaline, from 3 to 10‰) does not hold for this locality.

The temperature of the water is fairly stable the year round, varying from 8.5° in winter to 14° in summer. This, of course, applies to the central portion of the Sound only. The intertidal zone will be subject to greater extremes.

The fauna accompanying *P. leuckarti* is a typical sandfauna with gastrotrichs (*Turbanella* spp., *Macrodasys* sp., *Paraturbanella* sp.), cumaceans (*Cumella vulgaris*, *Lamprops krasheninikova*), many nematodes, etc. At Vashon Island, due to the finer substratum and the proximity of seaweeds, some representatives of a mud-fauna, e.g., *Corophium insidiosum* and *Leptochelia dubia*, occurred in the same habitat.

My specimens of *P. leuckarti* conform with previous descriptions. This is especially evident if the structure and size of the nematocysts, as shown in Figure 1*c*, *d*, are compared with the figures and data by Luther (1923), and Weill (1934).

In length the adult specimens varied between 0.7 and 2 mm., according to the state of contraction of the animal.

I have encountered copepods and nematodes in the body cavity of some of my species. Others were actually seen feeding on nematodes. In one case a *Protohydra* had begun to swallow a nematode about five times the length of the hydrozoan. By its violent movements the nematode had pierced the posterior end of its predator so that the latter appeared to be pulled like a sleeve over the prey. The body of the nematode was

covered with nematocysts that stuck to the cuticle.

Two species were sectioned, but there was no indication of gonads. Some specimens from Vashon Island, however, showed transverse fission. Although no zoogeographical conclusions can be drawn as yet, due to the absence of systematic studies in all parts of the world except the North European and, recently, the Mediterranean coast, I add a map (Fig. 2) with the distribution of *P. leuckarti* indicated. Recent information was contributed by Schulz (1950, 1952), Nyholm (1951), Valkanov (1947), Ruebush (1937), etc. The range of distribution makes it very likely that the species is cosmopolitan, as is already assumed by Nyholm.

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